

Remarks

Claims 25, 26, 28-42, and 49-52 are pending in the application, of which claims 25 and 40 are in independent form. Claims 25, 26, 28, 29, 40, and 41 have been amended by this amendment.

Priority Claim

Applicant thanks the Examiner for acknowledging the claim to priority of Great Britain Patent Application No. GB 0315623.9, which was filed July 3, 2003. Applicant submits with this response a photocopy of the certified copy of GB 0315623.9 that was filed in International Application No. PCT/EP04/07161 – the present application being a U.S. national stage application of PCT/EP04/07161.

Claim Rejections – 35 U.S.C. § 103

Claims 25, 26, 28-30, 33, 37, 39, 49, 50, and 51 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,110,388 to Komiyama et al. (“Komiyama”) in view of Japanese Patent No. JP02002343747 to Izumi et al. (“Izumi”). Claims 31 and 32 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Komiyama in view of Izumi and U.S. Patent No. 5,597,767 to Mignardi et al. Claims 34-36 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Komiyama in view of Izumi and U.S. Patent No. 6,472,295 to Morris et al. Claim 38 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Komiyama in view of Izumi and U.S. Patent No. 5,641,714 to Yamanaka. Claims 40-42 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent Application Publication No. 2005/0009307 to Shigematsu et al. (“Shigematsu”). Withdrawal of these rejections is requested in light of the claim amendments and following remarks.

Claim 25

Claim 25 is directed to a method of die bonding in which a structure is provided that includes “a wafer substrate separated from a carrier base by an adhesive layer positioned between the carrier base and the wafer substrate.” Claim 25 recites in pertinent part:

laser machining through the wafer substrate and the adhesive layer to form a singulated die with an attached singulated adhesive layer, the laser machining including controlling machining parameters of a laser beam in which a first laser machining profile is used to cut through the wafer substrate and a second laser machining profile is used to cut through the adhesive layer, the second laser machining profile being different from the first laser machining profile and adapted to inhibit substantial delamination of the adhesive layer from the carrier base with the adhesive layer in the non-cured state

In contrast, Komiyama and Izumi, either alone or in combination, fail to describe all the limitations of claim 25.

Komiyama describes die bonding of semiconductor chips using a photo-curable adhesive tape having a base sheet and an adhesive layer. *See Komiyama*, col. 2, lines 53-56. Komiyama describes that the adhesive layer is applied to a semiconductor wafer, and then the wafer and all or some of the adhesive layer are diced using a saw to form chips. *See id.* at col. 6, lines 4-13. As acknowledged on page 3 of the Office action, Komiyama fails to describe laser machining, a first laser machining profile, and a second laser machining profile.

Acknowledging that Komiyama fails to describe laser machining and first and second laser machining profiles, the Office action relies on Izumi to compensate for the deficiencies of Komiyama. Although the Office action notes that Izumi describes laser machining a wafer and an adhesive layer in order to form a singulated die, the Office action fails to address how Izumi fulfills the limitations of the first and second laser machining profiles. Accordingly, the Office action fails to establish a *prima facie* case of obviousness.

In fact, Izumi fails to describe first and second laser machining profiles as claimed in claim 25. To clarify what is meant by first and second laser machining profiles, claim 25 has been amended to state that the second laser machining profile is “different from the first laser machining profile and adapted to inhibit substantial delamination of the adhesive layer from the carrier base with the adhesive layer in the non-cured state.” Although Izumi describes cutting a semiconductor wafer and an adhesive layer with a laser beam,

Izumi makes no mention of “a second laser machining profile” as claimed. Specifically, Izumi fails to describe “a second laser machining profile [that] is used to cut through the adhesive layer, the second laser machining profile being different from the first laser machining profile and adapted to inhibit substantial delamination of the adhesive layer from the carrier base with the adhesive layer in the non-cured state.”

Accordingly, because Komiyama and Izumi, either alone or in combination, fail to describe every limitation of claim 25, Applicant submits that claim 25 is allowable over Komiyama and Izumi and requests that the rejection of claim 25 be withdrawn.

Moreover, claims 26, 28-39, and 49-51, which depend from and perforce incorporate the features of claim 25, are also allowable for the reasons discussed above with reference to claim 25. Applicant submits that certain dependent claims add further features not found in the cited references.

Claims 40-42

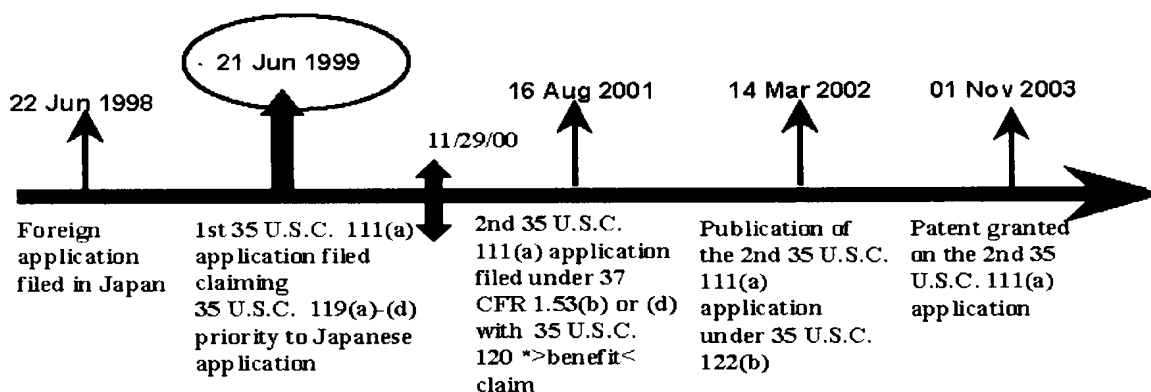
The present application is a U.S. national stage application of International Application No. PCT/EP04/07161, which claims priority to Great Britain Patent Application No. GB 0315623.9, filed on July 3, 2003. A photocopy of the certified copy of GB 0315623.9, which was filed in PCT/EP04/07161, is attached to this response in accordance with 37 C.F.R. § 1.55. The earliest publication date of Shigematsu is January 13, 2005, which is after the priority date of the present application. Thus, Shigematsu does not qualify as prior art under 35 U.S.C. §§ 102(a) and (b).

Moreover, Shigematsu does not qualify as prior art under 35 U.S.C. § 102(e). The U.S. filing date of Shigematsu is June 28, 2004, which is after the priority date (July 3, 2003) of the present application. Shigematsu claims priority to Japanese Patent Application No. 2003-190103, filed July 2, 2003. However, the filing date of Japanese Patent Application No. 2003-190103 is not accorded to Shigematsu for prior art purposes under 35 U.S.C. § 102(e).

Example 3, reproduced below, of section 706.02(f)(1)(II) of the Manual of Patent Examining Procedure (MPEP) addresses the calculation of the 102(e) prior art date for Shigematsu.

Example 3 : Reference Publication and Patent of 35 U.S.C. 111 (a) Application with 35 U.S.C. 119 (a)-(d) * > Priority < Claim to a Prior Foreign Application.

For reference publications and patents of patent applications filed under 35 U.S.C. 111 (a), the prior art dates under 35 U.S.C. 102 (e) accorded to these references are the earliest effective U.S. filing dates. No benefit of the filing date of the foreign application is given under 35 U.S.C. 102 (e) for prior art purposes (In re Hilmer , 149 USPQ 480 (CCPA 1966)). Thus, a publication and patent of a 35 U.S.C. 111 (a) application, which claims * > priority < under 35 U.S.C. 119 (a)-(d) to a prior foreign-filed application (or under 35 U.S.C. 365 (a) to an international application), would be accorded its U.S. filing date as its prior art date under 35 U.S.C. 102 (e). In the example below, it is assumed that the earlier-filed U.S. application has proper support for the subject matter of the later-filed U.S. application as required by 35 U.S.C. 120 .



The 35 U.S.C. 102(e)(1) date for the Publication is: 21 June 1999. The 35 U.S.C. 102(e)(2) date for the Patent is: 21 June 1999.

As stated in Example 3, “no benefit of the filing date of the foreign application is given under 35 U.S.C. § 102(e) for prior art purposes.” MPEP § 706.02(f)(1)(II). Thus, because the earliest filing date (June 28, 2004) accorded to Shigematsu is after the priority date (July 3, 2003) of the present application, Shigematsu does not qualify as prior art under 35 U.S.C. § 102(e).

Accordingly, because Shigematsu does not qualify as prior art under 35 U.S.C. §§ 102(a), (b), and (e), withdrawal of the rejection of claims 40-42 is solicited.

Notwithstanding its position regarding Shigematsu, Applicant has amended claim 40 to improve matters of form and to provide consistent terminology between claim 40 and claim 25.

Claim 52

Applicant notes that claim 52 was added to the application in a previous amendment. However, the Office action fails to indicate whether claim 52 is allowable or

rejected. Applicant believes claim 52 is allowable at least for the reasons discuss above with reference to independent claim 25. Moreover, Applicant believes that the limitations of claim 52 are absent from the applied art. Allowance of claim 52 is respectfully requested.


Conclusion

Applicant believes its application is in condition for allowance and respectfully requests the same.

The Commissioner is hereby authorized to charge any ***additional*** fees which may be required in connection with filing of this paper, or credit overpayment, to Deposit Account No. 19-4455.

Respectfully submitted,

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